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ABSTRACT

This fact sheet about students who are deaf-blind provides information on orientation and mobility (O&M) training. It begins by describing orientation and mobility skills, and emphasizes the need for a team approach in the development and implementation of O&M instruction. Instructional strategies are described, including initial assessment of O&M skills, program development and implementation, and evaluation. The basics of mobility skills are then addressed for guided travel, protective techniques, trailing, mobility devices, dog guides, electronic travel aids, and wheelchair mobility. Tips are provided for working with interpreters, and practical strategies for families and team members are listed, including: (1) provide opportunities for exploring all areas of the student's environment; (2) encourage experiences on a variety on surfaces; (3) allow full participation in activities; (4) make full use of "reference points"; (5) encourage independent travel; (6) be sure lighting is adequate for children who have residual vision; (7) make use of physical boundaries; (8) provide opportunities for problem-solving; and (9) encourage association of familiar toys and objects with the environments in which they may be used. (CR)

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THE NATIONAL INFORMATION CLEARINGHOUSE ON CHILDREN WHO ARE DEAF-BLIND

HELEN KELLER NATIONAL CENTER
PERKINS SCHOOL FOR THE BLIND TEACHING RESEARCH

DB-LINK FACT SHEET

MAY 1999

THE IMPORTANCE OF ORIENTATION AND MOBILITY SKILLS FOR STUDENTS WHO ARE DEAF-BLIND

By

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MARILYN GENSE

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The National Information Clearinghouse on Children Who Are Deaf-Blind

Helen Keller National Center
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THE IMPORTANCE OF ORIENTATION AND MOBILITY SKILLS FOR STUDENTS WHO ARE DEAF-BLIND

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May 1999

Our children learn about their environment as they move through it—about people and objects, sizes, shapes, and distances. They grow in understanding of their own bodies and their own capabilities of movement. The sight of toys or people and the sounds of voices or objects encourage them to move, to negotiate space, to discover. As they do so, they gather, recognize, and interpret an amazing array of sensory information. They process all this to see how to move safely and with purpose. For most of them, senses of sight and hearing provide the greatest motivation for movement.

Children who are deaf-blind may be less motivated to move about. Limited visual and/or auditory information may inhibit their natural curiosity. As a group, learners who are deaf-blind are quite diverse and may include children with physical, cognitive, or health problems in addition to combined hearing and vision losses. Some may feel insecure or frightened when moving about in an environment they can neither see nor hear clearly. Others may run on the track team or use motorized wheelchairs. Some communicate with speech or sign language, while others may not have had enough experiences in the environment to understand even basic concepts about that environment or about objects found in it.

It is essential that children who are deaf-blind receive learning opportunities and instruction that facilitate purposeful movement. For the child who is deaf-blind, movement is an opportunity to gather sensory information, to communicate, and to make choices. Orientation and mobility (O&M) instruction provides a set of foundational skills that can broaden the student's awareness of the environment, resulting in increased motivation, independence and safety.

Alex, a sighted and hearing child, is playing with Jason, his brother who is deaf-blind, in their bedroom. When Alex hears the front door opening, he assumes his mother has come home from work. This interpretation is reinforced when he hears the family dog barking excitedly. Wishing to greet his mother at the door, he quickly walks from his bedroom, safely avoiding the many toys scattered on the floor, continues traveling down the hall, moving through the kitchen and around the dining table. While running to greet his mother, he sees that she is carrying a large square cardboard box. Immediately recognizing the logo from his favorite pizza restaurant, he knows she has brought home his favorite dinner, a pepperoni pizza. Excitedly, he offers to carry the box back to the kitchen and completes this task successfully and proudly.

In this rather routine event, spanning only a few minutes, Alex has gathered and interpreted much visual and auditory information. Not only does he understand that his mother is home, but also that he can greet her at the front door if he hurries, and that they are about to eat his favorite meal. In moments, the sensory information he gathered and processed provided him easy access to his environment, allowing him safe movement through the house. Seeing the pizza box also provided him with clues about immediate future activity.

For Jason, however, the scenario is a bit different. He knows someone has entered the house because he was playing with the dog when the animal suddenly became excited, began to bark, and then ran out of the room. Jason may sense or hear some of this activity by partially seeing or feeling the dog alerting him. As the result of his O&M instruction, he now travels down the hall using a protective technique to move safely around the toys. He moves through the kitchen and around the dining table. By now, he can smell the pizza and becomes excited because pizza is one of his favorite foods. His O&M training has taught him how to move safely through his environment, determining where his mother might be. His mother greets him, allows him to feel the warm box, and communicates that she has brought home pizza. The mother and son use guided travel to walk to the kitchen.

From O&M instruction, Jason has learned to interpret and utilize available sensory information.

He knows how to move safely through the environment and he is rewarded with success in finding out what he wanted to know.

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What is O&M for the Child Who Is Deaf-Blind?

Orientation skills allow us to know where we are, where we are going, and how to think about and plan strategies for getting to a destination. **Mobility** involves the actual movement from place to place. Along with communication skills and daily living skills, O&M skills are essential for all children who are deaf-blind. The ability to understand the environment and to move safely within it is an important component of future development, success, and independence.

O&M instruction for individuals who are deaf-blind is designed to teach them to move as independently and as purposefully as they are able. For some children who are deaf-blind, it is reasonable and desirable to expect that they will move about independently in the outdoors. This independence may mean using a long white cane, to cross streets successfully and learning to use city transportation systems. For others, O&M instruction will provide the skills necessary to allow independent movement within the classroom or within the home. At a more basic level, and for children with limited motoric capabilities, increased independence will mean that they have better developed residual senses and can more fully understand and interpret information from their environments. They may come to understand where an object is located and where the object is in relation to their own bodies. They will have the ability to move with purpose, perhaps to extend an arm or roll to obtain that object.

While outcomes and expectations may be different for the student who is deaf-blind, the instruction is similar to that for a child with only visual impairment or blindness. The most important adaptations are those related to **communication**. The O&M instructor will need to ensure that instructions are given to the student in his or her primary language. This may require the use of an interpreter and the development of touch cues or object cues. Certain accommodations that enable the student to interact with the public also need to be developed. For some children, the lack of auditory and visual input may have severely limited opportunities to learn about his/her environment and to develop the language to talk about it. O&M instruction must often be augmented by hands-on learning to make up for the child's lack of prior experience. Language instruction is an integral part of any O&M training experience.

A Team Approach

Originally designed to assist veterans blinded in war, O&M techniques and instruction have broadened over the past few decades to include children who are blind or visually impaired and, more recently, children with multiple disabilities including those who are deaf-blind. The 1997 reauthorization of the Individuals with Disabilities Education Act (IDEA), Public Law 105-17, identifies orientation and mobility as a related service that teams may consider in the development of the IEP. Early focus on O&M instruction is essential for the child who is deaf-blind to develop the skills needed to travel and move independently about the environment.

A team approach is vital in the development and implementation of O&M instruction. A team may be composed of a parent, regular and special education teachers, other related services personnel, a representative of the local education agency, other individuals who may have special knowledge regarding the child and, where appropriate, the child. Each team member brings a unique perspective to the development of an appropriate educational program. The O&M specialist will participate in team-based assessments of the child and works collaboratively with all team members, including the parents, to address the unique O&M needs of the child. The O&M specialist also provides the team with activities that reinforce movement skills and promote understanding of the environment. He or she assists in analyzing the home and school environments and makes recommendations for strategies that may improve a child's ability to travel within, and better understand, these environments. The O&M specialist may be involved in directly teaching the child specific skills he or she needs to travel safely and will share these with other team members so each can reinforce them with the child. All team members must understand and share in the responsibility of supporting an appropriate, individually developed O&M instruction program that reinforces movement, promotes orientation, and encourages independent travel and purposeful movement.

Instructional Strategies

It is best to view O&M instruction as a process, beginning with assessment. Each stage leads to another. The process cyclical.

Once a program is developed and implemented, the evaluation and assessment stages may be combined. However, all instructional components of each child's program must be continuously evaluated for effectiveness, with modifications made as necessary.

Assessment

Initial assessment of O&M skills provide the foundation for future program planning. The O&M specialist will work closely with other team members to identify and implement appropriate assessment techniques. Assessment may include the following:

- Informal student observation, conducted in natural environments in which the student interacts (home, school, etc.).
- Assessment of communication skills and necessary adaptations.
- Parent/caretaker interviews.
- Formal assessment of orientation and mobility skills.
- Assessment of learning modalities.
- Developmental assessment of:

  Sensory skills.

  Cognition.

  Motor skills (gross and fine).
- Environmental analysis. Environment analysis is a key component of the assessment process. The various environments in which the student is involved should be assessed for safety. The need for any modifications that may enhance a child's ability to travel in and understand the environment should also be assessed.

Program Development and Implementation

Communication. Developing ways to communicate presents the most significant challenge faced by children who are deaf-blind. Communication issues must be addressed in every aspect of instruction. For example, planning for instruction in areas such as concept development must take into account that although the child may be able to perceive the shape or configuration of a hallway intersection, he or she may need to be taught the specific language ("triangle" or "corner") for that perception.

Children who are deaf-blind use a variety of communication methods including tactile sign language or American Sign Language (ASL), speech, gestures, fingerspelling, augmentative devices, pictures, objects, body movements, behavior, and facial expressions. Instruction strategies must incorporate the child's primary communication methods.

Motor development includes both gross and fine motor skills and focuses on developing and/or enhancing a student's motor abilities. These skills involve large muscle movements such as walking or running, as well as the finer skills associated with hand and wrist movements.

Concept development is closely linked to general cognitive development. It involves the understanding of sizes, shapes, and functions of objects, as well as spatial and positional relationships. It includes the awareness and knowledge of one's own and another's body, an understanding of the body parts, of their movement capabilities, and of body part relationships.

Concept development also incorporates an understanding of and knowledge about the environment. For example, a child who is deaf-blind may not understand the concept of a "multistory" building without specific instruction. He may know that he's walked up a flight of stairs, but does he understand that he is "above" the hallway he just was in? Does he know that there may be several stories still above him?

Sensory development optimizes a student's ability to utilize the senses of residual sight and hearing, as well as the tactile, olfactory, and kinesthetic senses. Most students who are deaf-blind have residual hearing and/or sight, and instruction can be provided to help them learn to use this sensory information to understand and interpret information they are gathering through their senses. It is important to stimulate all the senses and to assist students in interpreting this information and responding appropriately.

Formal orientation skills enable the student to use sensory information to place himself or herself in the environment. Orientation skills instruction is designed to teach the student to use environmental cues (e.g., sounds, smells, and visual or tactile stimuli) to provide information about the present location and information about this location relative to other locales. A child may learn to recognize that she is in the kitchen from the smell of coffee brewing or the living room because of the sensation of the carpet beneath her feet. This information enhances her understanding about the environment and how to move within it.

Formal mobility skills incorporate those O&M techniques that promote movement through the environment with safety and ease. These skills include walking with another person (guided travel), self-protection skills, and cane travel. For some, these also include the use of dog guides and electronic travel aids. For young children, these mobility skills will include early purposeful movements such as crawling and walking.

Evaluation

All goals and objectives in the IEP should have stated criteria so team members can evaluate the child's progress and the effectiveness of the instructional strategies. It is essential that team members understand IEP goals and objectives and the criteria established for each. All strategies implemented into a child's educational program must be evaluated for effectiveness and changed as necessary.

The Basics of Mobility Skills

Numerous curricula discuss mobility skills and techniques that are appropriate for students who are deaf-blind (see resource list). These skills and techniques provide methods of movement through the environment that make the child feel safe and able to participate. Basic information is

presented in order to provide an overview of the different types of mobility skills and a better understanding of the purpose of each skill. For additional information, it is necessary to consult with an O&M specialist who can help to refine and individualize specific mobility skills appropriate for a particular child, develop individualized instructional programs, and recommend additional resource information.

Guided Travel

Many refer to the mobility technique involved in walking with another person as "Sighted Guide Travel." However, it is not necessary to be sighted to be an effective guide, and, therefore, the terms "Guided Travel" and "Human Guide" are also used. Using this technique, the deaf-blind child maintains a constant grip on the guide's arm (figure 1) while following the guide around obstacles as they travel through the environment. To maintain a grip that allows active participation in travel, the child must grasp the guide's arm so the thumb is placed on the outside, with the remaining fingers gripping the inside of the arm (figure 2). The child is half a step behind and to the side of the guide, allowing the guide to give "cues" about the environment through arm movements, such as cues to indicate they are approaching stairs, doors, or narrow spaces. The guide can move the guiding arm behind his or her back to indicate that they are approaching a narrow space and must walk single file. Other cues can be given to indicate stairs and doors.

Cues need to fit each child's communication and learning styles. For example, children who are blind will learn that the cue for "stairs" involves a pause from the guide when they have arrived at the base of the stairs. Children who are deaf-blind may find it helpful to enhance this cue by having the guide sign "stairs" and pause as they approach the stair case. Some children find it helpful to locate the stair railing before ascending or descending. A common adaptation for smaller students to the "basic" guided travel technique is to have the student grasp the guide's extended fingers, wrist, or forearm rather than maintaining a grip above the elbow (figure 3). Effective guided travel involves a partnership between guide and child with both participants actively involved.

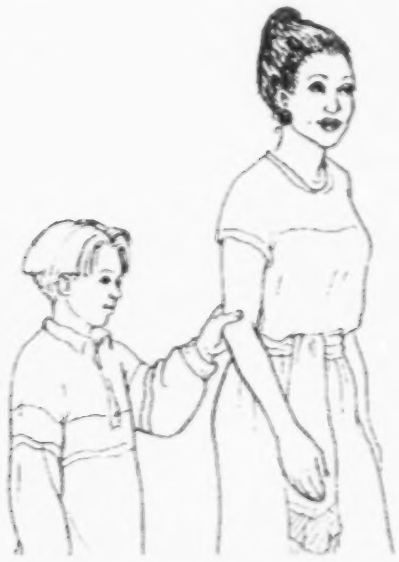

Figure 1

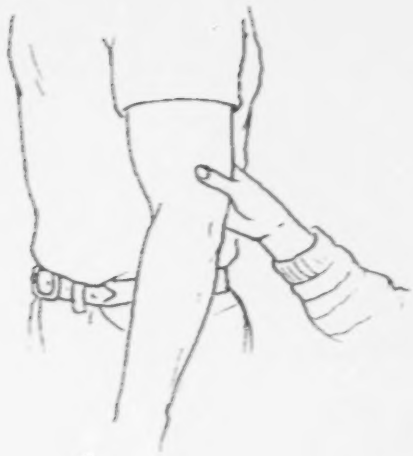

Figure 2

Figure 3

Protective Techniques

Protective techniques allow students to travel independently, yet safely, in familiar places, enabling them to locate objects while protecting their bodies. Protection skills are primarily used in familiar indoor environments and are designed to provide information about the environment during travel. Upper hand and forearm protection skills (figure 4) in which the arm is bent and held across the body at shoulder height, parallel to the floor, with the palm facing outward and the fingertips extending beyond the opposite shoulder, will provide protection from objects the student may contact at head and chest level.

Figure 4

Lower body protection (figure 5) with the arm extended down and held diagonally across the body, provides protection from obstacles at waist to upper leg level. These two techniques are sometimes used together, but they can be fatiguing. Typically, neither technique is used continually, but rather is employed as needed. For example, an individual may use trailing skills (see "trailing" below) while walking down a familiar hallway and use the forearm protection technique only near the end of the hall because he knows that there is a door that is often left open and he wants to locate it without injury.

Trailing

While trailing, a student will extend the arm at about 45 degrees, holding the arm to the side and slightly in front of the body while maintaining contact with a surface, such as a wall. This technique (figure 6) can provide a student with a method of maintaining alignment. It also provides some protection during travel, as well as some information about the environment. This skill can be used in a variety of situations. Examples include traveling

Figure 5

down hallways while looking for a specific object such as a door, or when a student wants to achieve a straighter line of travel to maintain orientation, or while traveling along the outside of a building while locating a way in. Trailing is also sometimes used along with a mobility device, or in conjunction with upper hand and forearm protection (figure 7).

Figure 6

Figure 7

Mobility Devices

There are many mobility devices that can, when properly used, provide a student with the means for independent, safe, efficient travel. The most commonly recognized mobility device is the long white cane. Many other mobility devices are also available, including adapted cane devices. Mobility devices serve as an "extension" of the user's arm(s), hand(s), and fingers, and provide protection from obstacles while allowing access to needed information about the environment. There are many theories about the selection of mobility devices, on the best times to begin instruction, and the skills necessary to warrant instruction with a particular device. It is vital that the student's team work closely with an O&M specialist in making decisions regarding the use of mobility devices.

Dog Guides

Some individuals who are deaf-blind prefer to use dog guides rather than canes. Dog guide use is taught at special dog guide schools. Most of the schools work primarily with adults who are blind or visually impaired, but there are several that offer their services to individuals who are deaf-blind as well. Most training programs provided at the schools involve four or more weeks of instruction, with many providing follow-up instruction in the student's home environment. It is important to remember that an individual who chooses to use a dog guide still maintains responsibility for his or her own travel. The dog does not assume responsibility for orientation, nor does it make decisions about safety. Most dog guide schools require that their students be skilled travelers before being accepted into the training program. Individuals who are considering a dog guide must also understand that there are additional responsibilities in caring for their dog, including the daily feeding, grooming, and toileting issues. Most dog guide schools prefer to admit only students who are past high school age, although some do work with younger students.

Electronic Travel Aids

Electronic Travel Aids (ETAs) are portable devices that emit sonar or laser signals that are reflected back to the user during travel, and are converted to auditory and/or tactile signals. The devices are hand held, or chest, head, wheelchair, or cane mounted, and usually serve to provide supplementary information during travel. Individuals using ETAs can learn to interpret information they receive from the device about obstacles that may be in their direct path, about "openings" in hallways, and about drop-offs or inclines in the travel surface. They may also be used to enhance trailing abilities.

Wheelchair Mobility

Any O&M program for students using wheelchairs must be highly individualized and must take into account the student's residual senses, his or her ability to operate a chair with one hand, and the potential use of a motorized wheelchair. In addition to the O&M specialist, the student's physical therapist and occupational therapist must be actively involved in all decisions regarding mobility for wheelchair users. Some general considerations for O&M instruction for students who are wheelchair users are presented here:

- Students who are able to operate the chair with one hand can be taught modified guided travel techniques. These techniques will allow them to gather additional information during travel.
- Some wheelchairs can be adapted by adding an extended "bumper" that will serve as an extension of the wheelchair, and act as a mobility device.
- Adding foam to the front of the chair can serve as additional padding to lessen the impact when detecting obstacles with the chair.
- Trailing skills can be utilized while traveling in a wheelchair. Students who operate their chairs with one hand can trail using the other. For students not able to operate the chair with one hand, "curb feelers" can be mounted on the side of the wheelchair. The student can be taught to trail using the curb feelers. Even when someone is pushing the chair, trailing can be used so that the student can gain information about the environment, thereby enhancing his or her ability to maintain orientation.

- The student's physical therapist and occupational therapist can help teach the student to open and close doors.
- Some students are able to use a long cane while using a wheelchair. This is true for students who are able to operate the chair using one hand, and for those who use motorized wheelchairs. Most often, the cane chosen for use with a wheelchair is longer than a typical cane.
- Instruction in interpreting information about the travel surface is important. The student can learn to discern the way different surfaces "feel" while traveling over a variety of surfaces such as, the gravel, grass, or sidewalks. This skill provides general environmental orientation.
- Using the student's communication mode or system, the person who is pushing the chair (in effect, "guiding" the student) should use strategies that encourage active student participation during travel. The student has a right to know where he or she is, where he or she is going, and what the environment is like. This information will encourage the student to actively learn from the environment rather than simply "sit" during travel.

Working with Interpreters [1]

by David Miller

For some students an interpreter is critical for teaching orientation and mobility (O&M) for numerous reasons, including the following:

- Clear and convenient communication is essential for establishing rapport. In turn, building rapport is basic to establishing a sense of trust and confidence for the student who is learning O&M skills.
- The aim of O&M instruction is safe and independent movement, and maintaining safety depends on the accurate communication of information.
- Students who are receiving O&M instruction may have a variety of questions and concerns. It is difficult to address their concerns or to be confidential when communication is impaired.

How do teachers, O&M instructors, and others work with interpreters during O&M instruction?

- They all work as a team.
- The O&M instructor needs to prepare the interpreter by teaching him or her O&M concepts and techniques, including sighted guide and basic cane techniques.
- The O&M instructor retains his or her teaching role; the interpreter works to make things clear; and the two consult with each other frequently. The O&M instructor checks the interpreter's sighted guide techniques and interpretation and provides the student who is deaf-blind with tactile experiences as often as possible.
- Goals and methods need to be modified during instruction as all members of the team refine their methods of communication and see how the student is progressing.
- Because working with an interpreter may be a slow process, patience is essential.
- Success depends largely on the student and the rapport and quality of communication between the student and the professionals with whom the student is working.

1 *From **Hand in Hand: Essentials of communication and orientation and mobility for your students who are deaf-blind.** edited by Kathleen Mary Huebner, Elga Joffee, Jeanne Glidden Prickett, and Therese Rafalowski Welch © 1995, p. 590. Reprinted with permission, New York: courtesy of American Foundation for the Blind Available through the Publisher*

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Practical Strategies For Families and Team Members

- Provide opportunities for your child or student to explore all areas of his or her environment, particularly the home. Help the child locate stationary landmarks that provide reference points. For example, a child may know that he is in his bedroom after locating his dresser with the "special" handles. Be sure to allow him to find this dresser so he will know when he is in the bedroom.
- Let your child or student experience a variety of surfaces such as carpet, tiled floors, vinyl flooring, grass, sidewalks, sand, uneven pavement, etc.
- Allow your child or student to participate fully in activities. For example, if he wants to play with toys, help him go to the place where the toys are located and select the toy that interests him. Travel back to the play area together. This process allows him to understand his environment more completely, as compared to having the toys simply brought to him.
- Make full use of "reference points," those clues that help us know where we are. We have all experienced being lost in an unfamiliar city, only to become "reoriented" once we locate a familiar landmark. Similarly, children who are deaf-blind need to learn to use reference points to help them stay oriented in their environment. Reference points can be auditory, tactile, olfactory, or visual.
- Encourage your child or student to travel as independently as possible. If he can walk independently, allow him to do so. If he is learning to walk with a guide, don't hold his hand and pull him along with you. If he is capable of reaching out to locate a desired toy, don't allow it to "magically appear" by bringing it to him.
- Be sure lighting is adequate for children who have residual vision. The use of high contrasts can also assist some students. For example, using a light rug on a dark carpet may help the child recognize a transition to a different room.
- Make use of physical boundaries so the child can better understand his surroundings. It is much easier to comprehend a play area bounded by wall dividers or bookshelves than an arbitrary space in the middle of a large room.
- Provide opportunities for the child or student to solve problems on his or her own. Refrain from rescuing him or her prematurely.
- Help a child or student associate familiar toys and objects with the environments in which they may be used. For example, show him the washcloth before walking to the bathroom for a bath, or the ball before traveling to the school gymnasium.

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Both Jay and Marilyn are certified O&M Specialists, and are also employed as adjunct faculty with the Pennsylvania College of Optometry, coordinating the Oregon O&M Certification graduate teacher-training program. They have conducted workshops and presented at conferences nationally, focusing their work on O&M instruction with children who are deaf-blind, and on working with students who are blind and have autism.

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